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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,552	06/05/2001	Gary Robert Burg	FKL 2 089 (1	5024

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EXAMINER

FONTAINE, MONICA A

ART UNIT PAPER NUMBER

1732

DATE MAILED: 09/15/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/857,552

Applicant(s)

BURG ET AL.

Examiner

Monica A Fontaine

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Rog (U.S. Patent 5,599,096), as described in the following paragraphs.

Regarding Claim 1, Rog shows that it is known to have an extruder having a screw with at least two helical flights (Figure 1, element 24) rotatable in a cylindrical barrel for propelling an extrudate material from an upstream portion (Figure 1, elements 10 and 18) and an extruder screw nose at a discharge end of said extruder of said barrel to a downstream portion characterized by said screw nose having an upstream portion of increasing diameter in the direction of flow of said extrudate providing a generally conical surface for decreasing a transition space between said screw nose and said cylindrical barrel and maintaining working engagement with said extrudate to maintain pressure on said extrudate at said discharge end (Figure 1, elements 30 and 32).

Likewise, regarding Claim 2, Rog shows that it is known to have an extruder, further characterized by said screw nose having a downstream portion of decreasing diameter in said direction of flow providing a generally conical surface generally parallel to a converging tapered wall of an adjacent flow channel block for maintaining working engagement with the extrudate

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and maintaining the pressure on the extrudate at the discharge end (Figure 1, elements 36 and 44).

Regarding Claim 3, Rog shows that it is known to have an extruder screw nose for a discharge end of an extruder having a screw with at least two helical flights (Figure 1, element 24) rotatable in a cylindrical barrel for propelling an extrudate material from an upstream portion of said barrel to a downstream portion of said barrel characterized by said screw nose having an upstream portion of increasing diameter in the direction of the flow of said extrudate providing a generally conical surface disposed at an angle of 45° to 65° relative to the axis of the screw nose and a downstream portion of decreasing diameter in said direction of flow providing a generally conical surface generally parallel to a converging tapered wall of an adjacent flow channel block (Figure 1, elements 10, 18, 30, and 32; Column 3, lines 14-18).

Likewise, regarding Claims 4-6, Rog shows that it is known to have an extruder screw nose, further characterized by (Claim 4) said angle of said conical surface of said upstream portion being about 50° (It is noted that the word "about" is being interpreted herein as $\pm 20^{\circ}$. Column 3, lines 14-15); (Claim 5) said generally conical surface of said downstream portion being at an angle of 35° to 45° relative to the axis of said screw nose (Column 3, lines 34-36); and (Claim 6) said generally conical surface of said downstream portion being at an angle of about 40° (Column 3, lines 34-36).

Regarding Claim 7, Rog shows that it is known to carry out a method of extruding a shaped visco-elastic component (Column 1, lines 6-15), comprising feeding a visco-elastic material into a cylindrical extruder barrel at a feed end of said extruder (Column 3, line 65 - Column 6, lines 1), rotating a screw to mix and provide working engagement of said screw with

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said cylindrical extruder barrel (Column 3, lines 55-65; Column 4, lines 1-2) characterized by maintaining working engagement of said screw and said extruder barrel at a discharge end of said extruder by confining the flow of said visco-elastic material through a transition space between a screw nose on said screw and said cylindrical extruder barrel wherein said screw nose has an upstream portion of increasing diameter (Figure 1, elements 30 and 32) in the direction of flow of said material to a diameter not greater than the diameter of said cylindrical extruder barrel providing an upstream generally conical surface.

Likewise, regarding Claim 8, Rog shows that it is known to carry out a method of extruding a shaped visco-elastic component, further comprising maintaining working engagement of said visco-elastic material from said upstream portion to a downstream portion of decreasing diameter (Figure 1, element 36) in said transition space wherein a flow channel head with a tapered wall is attached to said extruder characterized by conveying said visco-elastic material in working engagement with said downstream portion of said screw nose and said tapered wall of said flow channel head (Figure 1, element 44).

Regarding Claim 9, Rog shows that it is known to have an extruder and flow channel head assembly comprising an extruder having a screw and cylindrical barrel with a screw flight extending from a feed end to a discharge end (Figure 1, element 24), said discharge end being attached to a flow channel head containing a flow channel for carrying rubber from said extruder to a suitable die (Column 1, lines 6-9), a screw nose on said extruder screw positioned at the end of said screw flight in a transition space at said discharge end of said barrel characterized by said screw nose having a radially expanding upstream portion providing a conical surface of increasing diameter in the direction of flow of said rubber (Figure 1, elements 30 and 32) for

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maintaining said rubber in working engagement with said screw nose and said cylinder all, whereby the pressure on said rubber is maintained in said transition space.

Likewise, regarding Claims 10-11, Rog shows that it is known to have an extruder and flow channel head assembly, further characterized by (Claim 10) said screw nose having a downstream portion with a conical surface of decreasing diameter in the direction of flow of said rubber spaced from an opposing tapered wall of said flow channel head (Figure 1, elements 36 and 44) to maintain working engagement of said rubber with said conical surface of said screw nose and said tapered wall of said flow channel head whereby pressure on said rubber is maintained to prevent expansion of volatiles in said rubber; and (Claim 11) said flow channel having a generally constant cross sectional area from said tapered wall of said flow channel head to a discharge end of said flow channel head (Figure 1, element B; Column 4, lines 19-43) to maintain pressure on said rubber and provide time for volatiles in said rubber to be dissolved before ejection from said flow channel head.

Claims 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Counciller et al. (U.S. Patent 3,846,058). Regarding Claim 9, Counciller et al., hereafter "Counciller," show that it is known to have an extruder and flow channel head assembly comprising an extruder having a screw and cylindrical barrel with a screw flight extending from a feed end to a discharge end (Figure 1, element 32; Figure 2), said discharge end being attached to a flow channel head containing a flow channel for carrying rubber from said extruder to a suitable die (Abstract), a screw nose on said extruder screw positioned at the end of said screw flight in a transition space at said discharge end of said barrel characterized by said screw nose having a radially expanding upstream portion providing a conical surface of increasing diameter in the

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direction of flow of said rubber (Figure 1, element 32) for maintaining said rubber in working engagement with said screw nose and said cylinder all, whereby the pressure on said rubber is maintained in said transition space. Regarding Claim 10, Counciller shows that it is known to have an extruder and flow channel head assembly, further characterized by said screw nose having a downstream portion with a conical surface of decreasing diameter in the direction of flow of said rubber spaced from an opposing tapered wall of said flow channel head (Figure 1, element 32) to maintain working engagement of said rubber with said conical surface of said screw nose and said tapered wall of said flow channel head whereby pressure on said rubber is maintained to prevent expansion of volatiles in said rubber.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patent is cited to further show the state of the art with regard to extruder screws, in general:

U.S. Patent 6,547,431 to Womer

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica A Fontaine whose telephone number is 703-305-7239. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Colaianni can be reached on 703-305-5493. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Maf

September 2, 2003



**MICHAEL COLAIANNI
PRIMARY EXAMINER**